

Pseudo-Underage Assessment of Compliance With Identification Regulations at Retail Marijuana Outlets in Colorado

DAVID B. BULLER, PH.D.,^{a,*} W. GILL WOODALL, PH.D.,^a ROBERT SALTZ, PH.D.,^b & RANDALL STARLING, PH.D.^c

^aKlein Buendel, Inc., Golden, Colorado

^bPrevention Research Center, Pacific Institute for Research and Evaluation, Oakland, California

^cCenter on Alcoholism, Substance Abuse, and Addictions, University of New Mexico, Albuquerque, New Mexico

ABSTRACT. Objective: Four states are creating a regulated industry for the retail sale of cannabis products. This pilot study assessed refusal rates of sales to underage-appearing individuals without valid identification (ID) at retail outlets in Colorado. **Method:** State-licensed retail marijuana outlets ($n = 20$) in Colorado were included in the sample. Pseudo-underage assessment teams of a buyer and an observer visited each retail outlet once between 11 A.M. and 5 P.M. on four weekdays in August 2015. The observer entered first, performed an unobtrusive environmental scan, and recorded the outcome of the purchase attempt. The buyer attempted to enter the outlet and purchase a cannabis product. If asked for an ID, they did not present one. Once inside, if the clerk offered to sell cannabis, the buyer declined, saying they had insufficient cash, and departed. **Results:** Most outlets sold both retail and medical

marijuana (75%). All outlets (100%) asked the buyer to show an ID. Only one outlet was willing to sell marijuana to the pseudo-underage buyer after the buyer did not provide an ID (95% refusal rate). All outlets (100%) had posted signs stating that an ID was required for entry; approximately half had signs that only individuals 21 years of age or older could enter (55%) and how to properly use marijuana edibles (50%). **Conclusions:** Compliance with laws restricting marijuana sales to individuals age 21 years or older with a valid ID was extremely high and possibly higher than compliance with restrictions on alcohol sales. The retail market at present may not be a direct source of marijuana for underage individuals, but future research should investigate indirect sales. (*J. Stud. Alcohol Drugs*, 77, 868–872, 2016)

FOUR STATES HAVE LEGALIZED MARIJUANA for recreational purposes and are implementing retail sales. Similar to controls on alcohol, retail sales of cannabis are restricted to state-licensed outlets and individuals age 21 years or older who provide a valid state-approved identification (ID). These restrictions seek to reduce youth access to marijuana because access can promote initiation (Swahn & Hammig, 2000; Swaim, 2003; von Sydow et al., 2002). Given the high prevalence of use by minors (Conway et al., 2013; Eaton et al., 2012; Johnston et al., 2013), some may try to obtain marijuana from the retail market. The U.S. Department of Justice (DOJ) has told the states that their regulations “must not only contain robust controls and procedures on paper; *it must also be effective in practice* [emphasis added]” at achieving DOJ priorities, including preventing distribution to youth, or the DOJ may challenge the regulatory structure (Cole, 2013, p. 2).

Compliance with restrictions on sales of alcohol and tobacco to minors has been the focus of considerable research. Commonly, compliance is assessed using decoys or buyers appearing to be underage (DiFranza et al., 2001; Grube,

1997; McKnight, 1993). Pseudo-underage protocols present the most overt situation for refusing minors. Recent refusal rates for minors are approximately 65% for alcohol (Paschall et al., 2007; Toomey et al., 2008) and more than 90% for tobacco (Glanz et al., 2007; Pearson et al., 2007).

This article reports a pilot study that assessed refusal rates of sales to apparent minors by retail marijuana outlets in Colorado. The primary purposes were to verify that the pseudo-underage protocol could be implemented at the marijuana outlets and to obtain an overall estimate of refusal. The study was not designed to identify factors affecting compliance.

Method

Sample of retail marijuana outlets

A sample of 20 retail marijuana outlets licensed by the State of Colorado was created for the study. A small sample was selected because (a) the primary intent was to test the pseudo-underage protocol’s feasibility and estimate overall compliance, and (b) the project budget was limited. The sampling frame was the publicly available list of licensed retail outlets provided by Colorado’s Marijuana Enforcement Division, which contained the name and address of the licensees and retail outlets. A convenience sample was selected in locations along the urban Front Range of Colorado and the Interstate 70 corridor into the Rocky Mountains and to provide an assortment of urban, suburban, and rural loca-

Received: October 14, 2015. Revision: February 1, 2016.

The research reported in this article was supported by National Institute on Drug Abuse Grant DA038933.

*Correspondence may be sent to David B. Buller, Senior Scientist and Director of Research, Klein Buendel, Inc., 1667 Cole Boulevard, Suite 225, Golden, CO 80401, or via email at: dbuller@kleinbuendel.com.

tions but still control study costs. Within three of Colorado's large cities (>100,000 population) containing a large number of retail outlets—Denver, Aurora (suburb of Denver), and Pueblo—outlets were selected using simple random sampling (12 of 185 licensed outlets). In the remaining locations (i.e., unincorporated counties, small municipalities, and small suburbs around Denver, Colorado Springs, and Pueblo), 8 of 20 licensed outlets were selected, excluding those that had participated in other aspects of the research. This resulted in 7 urban (of 170), 8 suburban (of 37), and 5 rural/small town (of 12) retail outlets. Before the visits, local law enforcement agencies in each potential location were notified about the study and that the checks would not result in enforcement actions. All protocols and forms were approved by the Western Institutional Review Board, and the National Institutes of Health issued a Certificate of Confidentiality for this research.

Pseudo-underage buyer assessment procedures

Pseudo-underage buyer teams consisted of two people accompanied by a supervisor. Teams visited each retail outlet once between 11 A.M. and 5 P.M. on four weekdays in a single week during August 2015 (19 months after marijuana sales were legalized in Colorado). The timing of the visits was selected to avoid times of high customer load, when the pseudo-underage buyer might enter unnoticed. At this early stage of the developing market, we wanted to check on compliance with the law under the most favorable circumstances first. Later, after we established that vendors are compliant, research could look at whether compliance might be affected by crowding or other distractions. At each visit, one person acted as the buyer and the other was the observer. Male ($n = 9$ visits) and female ($n = 11$ visits) pseudo-underage assistants took turns acting as the buyer to balance gender.

Observers approached the retail outlet first and gained entry by showing their actual ID. They conducted an unobtrusive environmental scan of each outlet and positioned themselves where they could observe the pseudo-underage buyer–clerk interaction. Once the buyer completed the purchase attempt and departed, the observer waited 2 minutes, monitoring any comments made by the clerk, and then left the retail outlet.

The buyer approached the retail outlet 2 minutes after the observer entered and attempted to enter the outlet and make a purchase attempt. If asked for ID, the buyer said “I forgot my ID” and did not present any ID. If the entry or sale was refused, the buyer politely thanked the clerk and left. If the buyer was allowed to enter the outlet, the buyer approached a clerk, perused the cannabis products for sale, and requested to purchase pre-rolled joints. Once the clerk stated the price and requested payment, the buyer looked in her/his wallet, stated that he/she did not have enough money,

and left the outlet. The buyer never actually purchased any cannabis products; this restriction was placed on the study by the federal funding agency. Once outside the premise, the buyer and observer completed forms recording the result of the purchase attempt and information on the retail outlet and clerk.

The team supervisor transported the pseudo-underage customers to each retail outlet, assigned observer/buyer roles for each outlet, and checked the completeness of data collection forms. The supervisor also was available to troubleshoot problems and provide security for the team.

Pseudo-underage buyers/observers

Two persons served as pseudo-underage customers, a non-Hispanic White male and a Hispanic female, on a single pseudo-underage buyer team. Both individuals were age 21 years or older and were selected because they appeared young, possibly younger than age 21 years, were available during the data collection period, and were knowledgeable about research procedures. These two individuals (a male and a female) performed all of the pseudo-underage buyer attempts. The pseudo-underage customers were trained in standard pseudo-patron methods using a protocol modified from the researchers' earlier work (Woodall et al., 2012). It covered the purpose of the assessment, procedures to be followed by the observer and buyer (including ways the buyer should respond given various possible reactions by the retail outlet personnel, e.g., refused/allowed entrance), how to complete the observer and buyer forms (see below), and what to say to retail outlet personnel if they questioned the legitimacy of the pseudo-underage customers. The training stressed that no cannabis products were to be purchased, due to restrictions from the federal funding agency. Pseudo-customers practiced the buyer/observer procedures during the training, receiving corrective feedback from the trainers.

Buyer/observer forms

Following the purchase attempt, the buyer and observer completed data forms modified from our previous research on alcohol sales (Woodall et al., 2012, 2015). On these forms, they recorded whether the buyer was permitted to enter the retail outlet and whether the clerk indicated he/she was willing to sell cannabis to the buyer. Willingness to sell (yes vs. no) was the indicator of refusal, for it included access (i.e., failure to gain access was coded as “no” willingness to sell). The buyer and observer also recorded the gender, estimated age, and ethnicity of the clerk who interacted with the buyer. Observers recorded posted warning signs, number of outlet staff, and environmental features of the outlet (lighting, cleanliness, outdoor area free of debris), and comments from the clerk regarding the buyer.

TABLE 1. Characteristics and signage of the retail marijuana outlets

Variable	<i>n</i>	%
Type of outlet		
Retail only	5	25
Retail and medical	15	75
Location of outlet		
Urban Denver	7	35
Suburban areas around Denver	8	40
Rural areas/small towns	5	25
Outlet environment		
Good indoor lighting	18	90
Interior appeared clean	19	95
Area surrounding the outlet was free of debris	17	85
Warning signs in outlet		
Valid ID required for entry	20	100
No entry for minors	11	55
Information on dosing edibles	10	50
Consumption by pregnant women	1	5
Outlet has right to refuse sales	1	5
No consumption on premises	0	0
No sale to intoxicated customers	0	0
Firearms prohibited on premises	4	20

Note: ID = identification.

Analysis

The number of retail marijuana outlets willing or not willing to sell cannabis to the buyer was summarized and the rate of refusal calculated as the percentage of outlets that were not willing to sell (i.e., either did not permit entry or refused to sell).

Results

The sample of retail outlets was located in rural/small towns, suburban areas around Denver, CO, and urban Denver (Table 1). Most outlets sold both retail and medical marijuana ($n = 15$ [75%]; $n = 5$ [25%] sold retail marijuana only), were well lit ($n = 18$ [90%]), appeared clean ($n = 19$ [95%]), and had outside areas free of debris ($n = 17$ [85%]) (Table 1). The mean number of staff persons was 3.6 (range: 1–8).

Pseudo-underage buyers were asked to present an ID for entry into all of the retail outlets. The pseudo-underage buyer was allowed into the retail outlet and made a purchase attempt (of pre-rolled joints) at 1 of 20 dispensaries (95% refusal rate). When the pseudo-underage buyer did not present an ID, the most frequent verbal statement made by retail outlet staff was that they needed to see an ID for the buyer to enter the outlet ($n = 8$ [40%]). A few times, outlet staff also asked if the pseudo-underage buyer was age 21 or older ($n = 1$ [5%]), stated that they did not know if the buyer was 21 or older unless they saw the ID ($n = 1$ [5%]), said the state law prohibited the individual from being in the outlet ($n = 1$ [5%]), or told the individual to come back with an ID ($n = 1$ [5%]). The observer heard only one statement from a retail outlet staff person after the pseudo-underage buyer left: One

staff person sarcastically said to another staff person, “Well, she says she’s 21.”

Observers noted several warning signs posted in the retail outlets (Table 1). All outlets had a sign about a valid ID being required for entry, and just over half had a sign saying there was no entry by minors. Another sign in half the outlets provided information on properly consuming edibles. Less common signs stated that firearms were prohibited, cautioned women about using marijuana during pregnancy, and announced that the outlet had the right to refuse sales to any customer. No outlets had signs on prohibition of consumption on the premises and of sales to intoxicated customers.

Discussion

Compliance with laws restricting access to retail outlets selling marijuana to individuals 21 years or older presenting a valid ID was extremely high in this pilot study in Colorado. Compliance rates exceeded those for alcohol sales (Paschall et al., 2007; Toomey et al., 2008), were on par with tobacco sales (Glanz et al., 2007; Pearson et al., 2007), but were higher than the compliance rates reported by Washington State regulators for marijuana outlets, that is, 82% (18 of 22 outlets) and 88% (137 of 156 outlets) (seattlepi.com staff, 2015; Steinmetz, 2015). A limitation is that the sample of outlets was small and limited in area. Compliance rates might be lower if more outlets were checked; estimated refusal rates may not apply to other regions. However, Colorado regulators reported a high refusal rate (93%) since January 2014 (Paul, 2015b). Diverse locations were selected across multiple days, and both male and female pseudo-underage buyers were used, factors that might affect compliance rates (Clark et al., 2000).

There are several explanations for the high compliance rates. The licenses for retail outlets are limited and owners have made large financial investments. Thus, many may not be willing to put their valuable businesses at risk by failing to ID and refuse minors. The retail industry may be concerned that cannabis sales are illegal federally and sales to minors might cause the federal government to intervene. Colorado’s history with regulated medical marijuana sales before retail sale, and its decision to allow only medical marijuana outlets to sell retail cannabis during the first 9 months (although this restriction was lifted nearly a year before our assessments), may have made outlets more vigilant. Unfavorable media coverage could have heightened vigilance for fear it would erode the public’s tolerance for retail sales. The signs on properly using edibles in half of the outlets may be indicative of sensitivity to the unflattering media coverage of overconsumption of edibles (Hughes, 2014; Ingold, 2014). Finally, actions taken by regulators, including proactively working with the industry and performing compliance checks, or on-the-job training, may have motivated very high compliance.

There may be methodological reasons for the high compliance. Our pseudo-customer teams only visited retail outlets on weekdays and during the daytime to avoid times when personnel might be distracted by high customer volume. Adding weekends or evenings (outlets can be open until midnight) may reduce refusal rates. Further, there was only a single pseudo-customer team, so we could not control for pseudo-customer variation.

The high compliance rate in our sample is very favorable, suggesting that the retail market at present may not be a direct source of marijuana for underage individuals. Future research needs to investigate whether it is an indirect source for underage individuals through third-party sales by acquaintances 21 years or older. Another concern is whether high compliance rates will decline as the marketplace matures; compliance checks at 30 Denver retail outlets by regulators in September 2015 found lower refusal rates (77%) than in the previous 21 months (Paul, 2015a). Public acceptance and normalization of retail sales may cause the industry to perceive a greater public tolerance and fewer penalties for sales to youth. Compliance may decline as more outlets are licensed, employing more types of individuals, some who may be less responsible about not selling to minors. Compliance checks of retail marijuana outlets need to remain routine because the alcohol market shows that their effects can be short lived (Erickson et al., 2013).

Most of the signs seen at the retail outlets were aimed at keeping out underage individuals. The other common sign pertained to proper consumption of edibles. State regulators have launched efforts to promote safe consumption, including proposing new labeling of edibles (Wyatt, 2015). Still, many outlets were not providing visual warnings about problems with edibles or other potential issues (e.g., fetal exposure and sales to intoxicated customers). The latter may emerge as an issue if marijuana is linked to increases in impairment, especially when combined with alcohol (O'Kane et al., 2002), and more crashes and injuries from driving under the influence (Asbridge et al., 2012; Elvik, 2013; Hartman & Huestis, 2013; Li et al., 2012; Washington Traffic Safety Commission, 2015).

The compliance check protocol was similar to procedures used for alcohol and tobacco and was deployed without procedural problems in retail marijuana outlets. However, having pseudo-underage buyers not produce an ID may not accurately estimate underage individuals' ability to purchase marijuana. All outlets requested IDs, and failure to provide one was readily apparent. Sales might increase if minors are used as real underage buyers and they provide their actual underage ID, as is the case for tobacco (DiFranza et al., 2001). Pseudo-underage buyers presenting a fake ID may be more difficult to detect. Finally, it may be best to use pseudo-underage buyers who have experience purchasing marijuana to ensure they appear natural (DiFranza et al., 2001).

Any positive effect of state regulations on the new retail marijuana industry depends on the industry complying with them. Always checking IDs is one way that the regulations can keep marijuana out of the hands of underage individuals. Compliance with state regulations could be enhanced through routine and effective training in responsible marijuana sales practices.

References

- Asbridge, M., Hayden, J. A., & Cartwright, J. L. (2012). Acute cannabis consumption and motor vehicle collision risk: Systematic review of observational studies and meta-analysis. *BMJ*, *344*, e536. doi:10.1136/bmj.e536
- Clark, P. I., Natanblut, S. L., Schmitt, C. L., Wolters, C., & Iachan, R. (2000). Factors associated with tobacco sales to minors: Lessons learned from the FDA compliance checks. *JAMA*, *284*, 729–734. doi:10.1001/jama.284.6.729
- Cole, J. M. (2013, August 29). *Memorandum for All United States Attorneys: Guidance Regarding Marijuana Enforcement* [Memorandum from the U.S. Deputy Attorney General]. Retrieved from <https://www.justice.gov/iso/opa/resources/3052013829132756857467.pdf>
- Conway, K. P., Vullo, G. C., Nichter, B., Wang, J., Compton, W. M., Iannotti, R. J., & Simons-Morton, B. (2013). Prevalence and patterns of polysubstance use in a nationally representative sample of 10th graders in the United States. *Journal of Adolescent Health*, *52*, 716–723. doi:10.1016/j.jadohealth.2012.12.006
- DiFranza, J. R., Savageau, J. A., & Bouchard, J. (2001). Is the standard compliance check protocol a valid measure of the accessibility of tobacco to underage smokers? *Tobacco Control*, *10*, 227–232. doi:10.1136/tc.10.3.227
- Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Flint, K. H., Hawkins, J., . . . Wechsler, H. (2012, June 8). Youth risk behavior surveillance—United States, 2011. *MMWR Surveillance Summaries*, *61*, No. SS-4, 1–162. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6104a1.htm>
- Elvik, R. (2013). Risk of road accident associated with the use of drugs: A systematic review and meta-analysis of evidence from epidemiological studies. *Accident Analysis and Prevention*, *60*, 254–267. doi:10.1016/j.aap.2012.06.017
- Erickson, D. J., Smolenski, D. J., Toomey, T. L., Carlin, B. P., & Wagenaar, A. C. (2013). Do alcohol compliance checks decrease underage sales at neighboring establishments? *Journal of Studies on Alcohol and Drugs*, *74*, 852–858. doi:10.15288/jsad.2013.74.852
- Glanz, K., Jarrette, A. D., Wilson, E. A., O'Riordan, D. L., & Jacob Arriola, K. R. (2007). Reducing minors' access to tobacco: Eight years' experience in Hawaii. *Preventive Medicine*, *44*, 55–58. doi:10.1016/j.ypmed.2006.08.021
- Grube, J. W. (1997). Preventing sales of alcohol to minors: Results from a community trial. *Addiction*, *92*, Supplement 2, S251–S260. doi:10.1111/j.1360-0443.1997.tb02995.x
- Hartman, R. L., & Huestis, M. A. (2013). Cannabis effects on driving skills. *Clinical Chemistry*, *59*, 478–492. doi:10.1373/clinchem.2012.194381
- Hughes, T. (2014, May 8). Marijuana 'edibles' pack a wallop. *USA Today*. Retrieved from <http://www.usatoday.com/story/news/nation/2014/05/08/marijuana-pot-edibles-the-legalized-recreational/8463787/>
- Ingold, J. (2014, April 3). Marijuana edibles in spotlight in Colorado after student's death. *The Denver Post*. Retrieved from http://www.denverpost.com/news/ci_25488963/marijuana-edibles-spotlight-colorado-after-students-death
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). *Monitoring the Future. National survey results on drug use*

- 1975–2012: Volume 2, College students & adults ages 19–50. Ann Arbor, MI: Institute for Social Research, The University of Michigan.
- Li, M. C., Brady, J. E., DiMaggio, C. J., Lusardi, A. R., Tzong, K. Y., & Li, G. (2012). Marijuana use and motor vehicle crashes. *Epidemiologic Reviews*, 34, 65–72. doi:10.1093/epirev/mxr017
- McKnight, A. J. (1993). Server intervention: Accomplishments and needs. *Alcohol Health and Research World*, 17, 76.
- O’Kane, C. J., Tutt, D. C., & Bauer, L. A. (2002). Cannabis and driving: A new perspective. *Emergency Medicine*, 14, 296–303. doi:10.1046/j.1442-2026.2002.00347.x
- Paschall, M. J., Grube, J. W., Black, C., Flewelling, R. L., Ringwalt, C. L., & Biglan, A. (2007). Alcohol outlet characteristics and alcohol sales to youth: Results of alcohol purchase surveys in 45 Oregon communities. *Prevention Science*, 8, 153–159. doi:10.1007/s11121-006-0063-0
- Paul, J. (2015a, Sept. 30). Denver police issue 7 citations for underage marijuana sales. *The Denver Post*. Retrieved from http://www.denverpost.com/news/ci_28901191/denver-police-issue-7-citations-underage-marijuana-sales?source=rss
- Paul, J. (2015b, July 31). Two Aspen marijuana shops cited for underage sale to enforcement officer. *The Denver Post*. Retrieved from http://www.denverpost.com/news/ci_28567151/aspen-marijuana-shop-cited-underage-sale-enforcement-officer
- Pearson, D. C., Song, L., Valdez, R. B., & Angulo, A. S. (2007). Youth tobacco sales in a metropolitan county: Factors associated with compliance. *American Journal of Preventive Medicine*, 33, 91–97. doi:10.1016/j.amepre.2007.04.010
- seattlepi.com staff. (2015, July 17). *Seattle store sold marijuana to minor in latest round of stings* [Web log post]. Retrieved from <http://blog.seattlepi.com/marijuana/2015/07/17/seattle-store-sold-marijuana-to-minor-in-latest-round-of-stings/>
- Steinmetz, K. (2015, May 20). Washington State marijuana shops caught selling to minors. *Time*. Retrieved from <http://time.com/3891500/washington-marijuana-retail-sting-operations/>
- Swahn, M. H., & Hammig, B. J. (2000). Prevalence of youth access to alcohol, guns, illegal drugs, or cigarettes in the home and association with health-risk behaviors [Poster abstract]. *Annals of Epidemiology*, 10, 452. doi:10.1016/S1047-2797(00)00162-9
- Swaim, R. C. (2003). Individual and school level effects of perceived harm, perceived availability, and community size on marijuana use among 12th-grade students: A random effects model. *Prevention Science*, 4, 89–98. doi:10.1023/A:1022922231605
- Toomey, T. L., Komro, K. A., Oakes, J. M., & Lenk, K. M. (2008). Propensity for illegal alcohol sales to underage youth in Chicago. *Journal of Community Health*, 33, 134–138. doi:10.1007/s10900-007-9080-6
- von Sydow, K., Lieb, R., Pfister, H., Höfler, M., & Wittchen, H. U. (2002). What predicts incident use of cannabis and progression to abuse and dependence? A 4-year prospective examination of risk factors in a community sample of adolescents and young adults. *Drug and Alcohol Dependence*, 68, 49–64. doi:10.1016/S0376-8716(02)00102-3
- Washington Traffic Safety Commission. (2015, August). *Marijuana increased in 2014 as a factor in deadly crashes*. Retrieved from <http://wtsc.wa.gov/News/marijuana-increased-in-2014-as-a-factor-in-deadly-crashes>
- Woodall, G. W., Saltz, R., Buller, D., Starling, R., & Stanghetta, P. (2012, May). *Results of a randomized trial of web-based responsible beverage service training: WayToServe.org*. Poster presented at the annual meeting of the Society for Prevention Research, Washington, DC.
- Woodall, W. G., Starling, R., Saltz, R. F., Buller, D. B., & Stanghetta, P. (2015, June). *Results of a randomized trial of web-based retail RBS training: WayToSell&Serve.org*. Paper presented at the 41st Annual Meeting of the Kettl Bruun Society for Social and Epidemiological Research on Alcohol, Munich, Germany.
- Wyatt, K. (2015, August 11). A new symbol to identify Colorado pot edibles: THC ‘stop sign.’ *The Denver Post*. Retrieved from http://www.denverpost.com/news/ci_28622359/a-new-symbol-to-identify-colorado-pot-edibles-thc-stop-sign?source=infinite